



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,515	04/07/2005	Takenobu Sunagawa	Q86666	5345

23373 7590 11/03/2005  
SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

BERNSHTEYN, MICHAEL

ART UNIT PAPER NUMBER

1713

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/530,515	<b>Applicant(s)</b> SUNAGAWA ET AL.	
	<b>Examiner</b> Michael Bernshteyn	<b>Art Unit</b> 1713	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>04/07/05, 05/10/05</u> | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al. (U.S. Patent 6,447,913).

With regard to the limitations of claims 1-3, Watanabe discloses a thermoplastic polyester resin composition, wherein a thermoplastic polyester resin (A) is compounded with **1-25% by weight** (in the total composition) of impact resistance rendering materials (B), 0.1 to 15% by weight (in the total composition) of silicone compound and/or a fluorine compound (C), 1-50% by weight (in the total composition) of an inorganic filler (D), and 0.1-10% by weight of at least one polyfunctional compound (E) selected from the group consisting of an epoxy compound, an isocyanate compound and a carboxylic acid dianhydride. A molded article has anti-stress properties even in weld part thereof (abstract).

Examples of the polyester resin used as the component (A) are condensation polymerization products between a diol and a dicarboxylic acid such as **polyalkelene terephthalates** are preferably used, and **polybutylene terephthalates** and copolymers

Art Unit: 1713

principally containing them are most preferably used. A mixture comprising two or more polyester resins mentioned above may be used (col. 3, lines 14-17).

Typical examples of impact resistance rendering materials (B) include thermoplastic elastomers and **core-shell polymers**. The thermoplastic elastomers is a generic term for polymeric substances, which is a solid exhibiting rubber-like elasticity at ordinary temperature but fusable with thermoplastic resins because the viscosity is reduced with an aid of heat. **Addition of the component B leads to decrease in the internal stress generated in the resin, which makes it possible to inhibit the development of cracks in alkaline solutions.** Accordingly, the component be is essential. The kinds of the thermoplastic elastomers are not particular limited and examples thereof include olefins, styrenes, polyesters, polyamides and urethanes (col. 3, lines 34-48).

Of the olefin elastomers, **grafted copolymers** can be suitably used wherein ethylene/alkyl unsaturated carboxylate copolymers (a-1) or olefinic copolymers prepared by  $\alpha$ -olefins and glycidyl ester of  $\alpha,\beta$ -unsaturated acids (a-2) are chemically bonded with one or two or more of polymers or copolymers mainly composed by repeating units in the form of a branched or crosslinked structure (col. 3, lines 60-67).

Such **graft copolymers** have a particular effect of improving the resistance against alkaline solutions and particularly suitably used as the impact resistance rendering materials. Examples of the ethylene/alkyl unsaturated carboxylate copolymers (a-1) include random copolymers such as ethylene/acrylic acid copolymers, ethylene/methacrylic acid copolymers, ethylene/acrylic acid/ethyl acrylate copolymers,

Art Unit: 1713

ethylene/ethyl acrylate copolymers, ethylene/vinyl acetate copolymers and ethylene/ethyl acrylate/vinyl acetate copolymers, and furthermore, mixtures of these copolymers can be used (col. 4, lines 18-28).

$\alpha$ -Olefins, that re one side of monomers forming the olefin copolymers (a-2), include ethylene, propylene and butane-1, and ethylene is preferably used. The glycidyl esters of  $\alpha,\beta$  -unsaturated acids that are the other side of the monomers forming the component (a-2) are compounds, which include glycidyl acrylate, glycidyl methacrylate and glycidyl ethacrylate, and in particular **glycidyl methacrylate** is preferred (col. 4, lines 29-38). The suitable composition of the segment (a-2) consists of 70 to 99% by weight of  $\alpha$ -olefins and 30 to 1% by weight of glycidyl esters of  $\alpha,\beta$  -unsaturated acids (col. 4 lines 49-51).

Polymers or copolymers (b) that are subject to **graft polymerization** with the olefin copolymers (a-1) or (a-2) are the following: poly(methyl methacrylate), poly(ethyl acrylate), poly(butyl acrylate), polystyrene, polyacrylonitrile, **acrylonitrile/styrene** copolymers, **butyl acrylate/ methyl methacrylate** copolymers and **butyl acrylate/styrene** copolymers (col. 4, lines 52-63).

Watanabe discloses that in the **graft copolymers** the olefin copolymers of the aforesaid (a-1) or (a-2) or polymers or copolymers of (b) are not to be separately used. The feature of graft copolymers is to have a branched or crosslinked structure where the copolymers (a-1) or (a-2) and the polymers or copolymers of (b) are chemically bonded together at least at one point. **Such graft structure exerts a remarkable effect that cannot be attained by singly blending (a-1), (a-2) or (b).** Herein, the ratio

Art Unit: 1713

of (a-1) or (a-2) to (b) to compose the graft copolymers is suitably from **95:5 to 5:95** in weight (col. 4, line 66 through col. 5, line 10).

In the core-shell copolymers, vinyl polymers are used for the shell layer formed of the of the glassy resin. The vinyl polymers are obtained by the polymerization or copolymerization of at least one monomer selected from aromatic vinyl monomers, cyanided vinyl monomers, methacrylic ester monomers and acrylate ester monomers. In general, these rubber and shell layers of the core-shell copolymers are bonded through graft copolymerization. This graft copolymerization is carried out, if necessary, by adding a graft crosslinking agent reacting with the shell layer in the polymerization of rubber layer, providing reactive groups to the rubber layer, and allowing the shell layer to form (col. 7 line 57 through col. 8, line 2).

Watanabe discloses that a number average molecular weight of the epoxy group-containing ethylene-copolymer ranges from 5,000 to 600,000 and preferably from 10,000 to 500,000 and the distribution of molecular weight [ratio of the weight average molecular weight (Mw) to the number average molecular weight (Mn) (Mw/Mn)] is **10 or less**. The molecular structure of the block copolymers can be straight chain, branched chain or radical structures, or include all arbitrary combinations of these structures (col. 5, lines 46-54).

Thus, the weight average molecular weight of Watanabe would read on the claimed range because it only needs simple mathematical skill for one ordinary skilled in the art to calculate the weight average molecular weight of Watanabe.

Art Unit: 1713

2. With regard to the limitations of claims 4 and 5, Watanabe discloses that the compositions can be applied to various processes for molding and formed into various molded articles. That is, the compositions are suitably applied not only to injection molding (insert molding) but also to extrusion molding, blow molding (various hollow articles), vacuum forming and compression molding. They are in particular suitable for molded products having any one of a metal insert, a press-fit member and a screwed part, or a weld part, the molded article being used in places, contacting with water, alkali, etc. under stress (col. 11, lines 51-60). The compositions and molded articles have very excellent long-term durability to alkaline solutions and can be suitably used in a wide variety of the fields such as electric, electronic, automobile and general merchandise fields (col. 12, lines 23-27).

Therefore, the instant claims are obvious variants of claims of US Patent 6,447,913, and one skilled in the art would not be able to practice the invention of the instant claims without infringing the invention of US Patent 6,447,913.

### ***Conclusion***

Other references used but not cited in this office include U.S. Patents 6,617,417, 6,576,717, 6,512,046, 6,512,027, 6,447,913, 6,180,251, 5,596,049, 5,362,804, 5,352,500, 5,310,799, 5,268,438, 4,999,388, 4,795,771, 4,694,049, US Patent Application Publications 2002/0091196, 2005/0049364, JP 62149748 and JP 62187756 are shown on the Notice of References Cited Form (PTO-892).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Bernshteyn whose telephone number is 571-272-2411. The examiner can normally be reached on M-F 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Bernshteyn  
Patent Examiner  
Art Unit 1713

MB  
10/26/2005



DAVID W. WU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700